

Applicant Remarks

Applicant has amended claims 1 and 2 to address the Section 112 rejection.

Examiner states that Noakes discloses a "focus" as a "focus is a projection in the form of a rod adjacent [to] walls of the spray electrode and extending beyond a front surface....." However, a focus is a point of convergence of electric field lines, not "a rod" This is important to note because Applicant's invention relies on the projection and its radii of curvature relative to the spray electrode radii of curvature to locate the electric field focus and shape the electric field. In contrast, Noakes consistently discloses that the edge (7) is sharp and provides no consideration of a rounded shape for its tip, nor a geometric relationship between the shape of a rounded projection tip and that of the spray electrode. At [6, 49-64], Noakes discloses that a sharp outlet edge, element (7), results in a more intense electrical field that improves atomisation. This teaches away from the invention here, where the relative geometry of the rounded curves of the spray electrode and projection are selected to optimize the atomisation. Noakes' solution to the risk of multiple jets of fluid forming is not to round the ends of the spray device and projection and maintain their relative radii of curvature in a specific geometric relationship. Rather, Noakes, as disclosed at [6, 65] to [7,18], maintains the sharp edge of element (7) and enlarges the "included angle between respective sides of the plate at the outer edge." As the Examiner admits, Noakes is silent about the exploiting the relative radius of curvatures of a spray electrode and a projection from the face of the spray electrode.

The Examiner cites In re Dailey 357 F 2d 669, 149 USPQ 47 (CCPA 1966) as providing some kind of basis to assert that it would have been obvious to "modify the apparatus [of Noakes] to the desired shape while maintaining the intensified electrostatic field."

Respectfully, this is simply a rhetorical device to sweep the Examiner's impermissible hindsight analysis under the rug. Indeed, an entire heading the MPEP states that "Legal precedent can provide the rationale supporting obviousness only if the facts in the case are sufficiently similar to those in the application." MPEP §2144(III). That is not the case here.

The portion of the Dailey opinion cited by the Examiner had to do with the configuration of a baby bottle, specifically claims 27 and 28 at issue in the application at issue in that case. The court described those claims as follows: "Claim 27, while defining no particular nipple opening structure, recites the configuration of the top and bottom sections of the container as that of 'a portion of a sphere less than a hemisphere.' In claim 28, the central angle of those spherical portions is about 80°." The point of novelty in the patent was the use of a collapsible bag in the baby bottle in order to prevent the baby from imbibing air mixed with the milk. The point of novelty was not the shape of the container. The court concluded that:

"Appellants have presented no argument which convinces us that the particular configuration of their container is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing mating surfaces in the collapsed container of Matzen."

In this case, the facts are entirely different. The specific relationship of the radius of curvature of the spray electrode relative to that of the projection is a result of the physics

of electric fields. The relationship is not a simple choice, but rather a specific requirement to exploit that physics in a manner Noakes does not disclose at all. Claim 1 and Claim 2 specifically recite that "the projection being rounded with a radius of curvature less than that of the spray electrode." That is because of the effect of the curvature on the intensity and shape of the electric field lines emanating from the projection and the spray electrode. There are not well-known "numerous configurations" of shapes of projections and spray electrode surface shapes that would perform the same way as apparently the court found in Dailey in regards to baby bottle shapes. "If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection." MPEP §2144.04. The In re Dailey case provides no support to find obviousness in this case.

The consistent use of sharp edges by Noakes as a way to ensure a more intense electric field-- which is part of the teaching in Figure 13 of Noakes--teaches away from the rounded surfaces claimed by Applicant. Teaching away is evidence of non-obviousness. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). The Noakes invention needs that intense electric field because, as noted above, the opposite side of the electric field is the destination of the fluid, element (16) at the bottom of Figure 1. Modifying Noakes to be more like Applicant's invention would make it inoperative. "In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed

invention as a whole would have been obvious. Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); Schenck v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)" MPEP §2141.02 (I). In this case, the invention claiming a spray electrode with a rounded end and a projection with a rounded end where the relative radii of curvatures have a specific relationship as a whole is non-obvious over a spray electrode with a sharp edge for the projection and oblique angles for its surface. Changing the shapes changes the physics of the electric field in critical ways. Modifying Noakes would require removing the sharp "edge" of element (7) among other modifications to end up with the invention claimed by the Applicant. Yet Noakes informs us that the sharp edge provides a more intense electric field, as a desirable object. These theoretical changes to Noakes would not be predictable or routine because of the criticality of the electric field focus location and field shape.

In conclusion, Applicant's invention is an unexpected result as compared to the Noakes patent. Applicant respectfully requests that the Examiner withdraw the rejection under §103.

Applicant has added three new dependent claims. Antecedent basis for claim 24 is provided in the figures and paragraph 0010. Claim 24 is distinguished from Noakes because Noakes' spray device has the projection seated within the capillaries delivering the fluid. In contrast, the invention here claims projections that are on the surface of the of the spray electrode outside the capillary tube. Antecedent basis for claims 25 and 26 is provided in the specification at paragraph 0023.